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The Leonids 1900: *Observations at the University Observatory, Oxford.* By H. H. Turner, M.A., F.R.S., Savilian Professor.

Continuous watch was kept on the nights of November 13, 14, 15, with practically no result. On November 13 the sky clouded over at $16^h\ 35^m$; on November 14, at $13^h\ 20^m$; and on November 15 at about $13^h\ 30^m$, though there was a partial clearance about 15^h–16^h. On November 14 about eleven meteors were noticed between the hours of $11^h\ 30^m$ and 14^h, none of them *Leonids*; but no special attention was paid to these observations, the watch being kept simply for a notable display. Several cameras were ready for exposures, but of course no results were obtained.

The Leonids, 1900. *Observations made at the Radcliffe Observatory, Oxford.*

(*Communicated by the Radcliffe Observer.*)

In anticipation of a return of the Leonids this November, arrangements were made for observations, and, in view of the possibility of a dense swarm occurring, an electric cable had been laid from the tower to the chronograph, and a mechanical enumerator was also provided.

On November 11 and 12 an examination of the sky was made at intervals, but the observers failed to detect any Leonids. Much cloud prevailed.

On the night of November 13 Mr. McClellan undertook the watch from 11^h to $14^h\ 30^m$, when he was relieved by Mr. Wickham, who remained on duty till dawn.

On November 14 Mr. Robinson kept watch during the whole period from 11^h till dawn.

It was further arranged that Mr. Jenkins, who slept during these two nights at the Observatory, should, in the event of a shower of meteors, be sent to summon the Radcliffe Observer and the other members of the staff.

The observers on duty report as follows:—

Mr. McClellan.—November 13, $11^h\ 30^m$ to $14^h\ 30^m$ G.M.T. The sky was very variable, being often covered with quickly moving cloud, whilst in the East thin clouds, which remained almost stationary, concealed the radiant until 14^h; after this the "Sickle" could be seen through breaks in drift.

At $13^h\ 30^m$ a sporadic meteor crossed the constellation of *Orion* from E. to W. with a swift motion.

Mr. Wickham.—November 13, $14^h\ 30^m$ to $15^h\ 15^m$. The sky was sufficiently clear to identify all my reference stars, except those below the 4th magnitude, which were invisible, the Moon being near the radiant in the constellation *Leo.* The haze near

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the horizon was thick enough to obliterate all stars below the 1st magnitude. At $15^h\ 15^m$ G.M.T. the sky clouded for fifteen minutes, then rapidly cleared, but floating clouds occasionally concealed the Moon and the radiant.

The following notes of meteors were taken :—

G.M.T.		
h	m	
15	44	Leonid across *Coma Berenices*, $3\frac{1}{2}$ mag. When tracking its course by means of a straight-edged wand, it had evidently proceeded from the *Leo* radiant.
15	52	Two Leonids in rapid succession passed just above δ *Leonis* ; the second was the brighter, and estimated mag. 3.
15	57	Leonid, from near *Mars*, almost perpendicularly into the haze near horizon. *Mars* was in the centre of the triangle formed by α, η, and ψ *Leonis*.
16	8	Leonid, from ζ *Leonis* upwards into *Leo Min.* Reference stars are faint here.
16	8	From *Leo* radiant down to ρ *Leonis*.
16	10	From *Leo* radiant to near ω *Ursæ Majoris*.
16	14·5	Sporadic, from near o *Ursæ Maj.*, past the "Sickle," to just beyond β *Leonis*.
16	21	Leonid, from γ to δ *Leonis*.
16	27·5	Leonid, from γ *Leonis* to ξ *Ursæ Majoris*.
16	29	Leonid, from *Mars* downwards towards horizon.
16	30+	Clouds came up and obscured the whole sky.
18		Shower of rain.

Considering that moonlight, haze, and cloud were serious impediments, and that it is also probable some Leonids escaped notice whilst I was making entries in my note-book of those observed, I am of opinion that in the absence of the Moon from the radiant, and with a clear sky, I should have observed as many as during my watch last year. The meteors noted above preserved their characteristics of yellowish light, rapid motion, and a faint short trail or streak quickly fading out.

Mr. Jenkins.—November $13^d\ 18^h\ 13^m$ to 17^m. "I saw four meteors during breaks in cloud, the only other objects visible being the Moon, *Mars*, and *Regulus*." From a sketch made shortly afterwards, three of these appear to be Leonids, whilst the fourth is doubtful.

Mr. Robinson.—November $14^d\ 11^h$ to $12^h\ 30^m$. Sky covered with detached masses of cloud ; stars only occasionally visible. For the next hour the clouds parted sufficiently to reveal whole constellations, principally *Taurus*, *Gemini*, *Ursæ Maj.*, and *Orion* ; but only stars to mag. 4 were visible. At $12^h\ 50^m$ many faint stars were easily seen. At 13^h, sky thicker, with lunar halo, *Regulus* and *Mars* visible. At 16^h, rain till after dawn.

No meteors were seen during the watch ; but, owing to the

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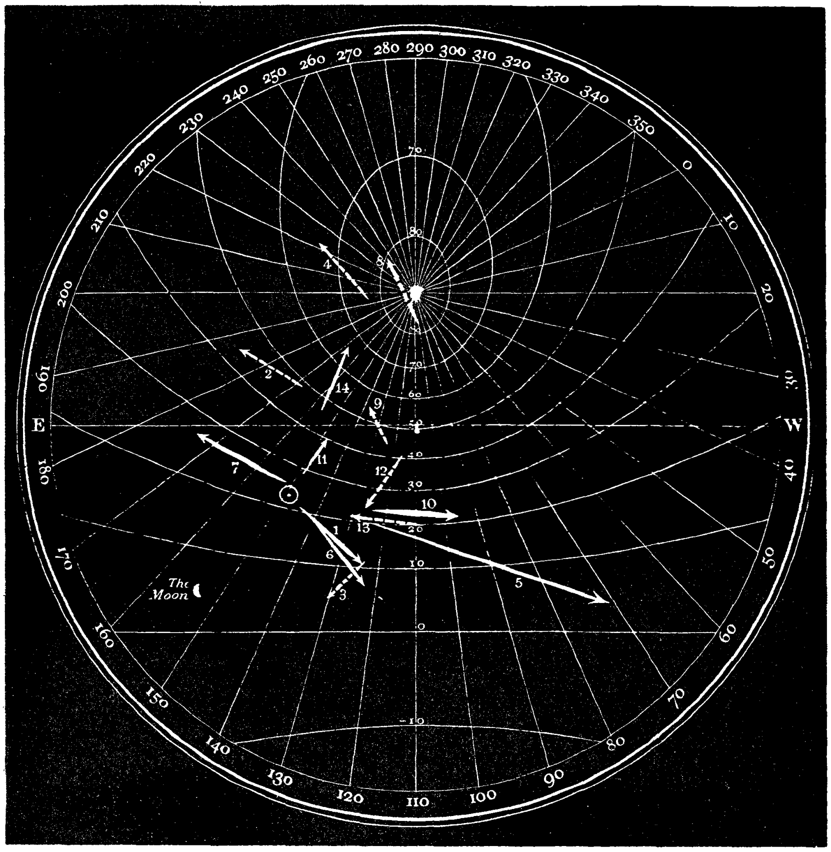
unfavourable conditions, meteors fainter than mag. 2 would hardly have been visible, except for a short interval about $12^{h}\ 50^{m}$.

On November 15 watches were kept for brief intervals, but no meteors were seen by any of the observers.

The Leonids, 1900 *November* 14: *Observations made at Blackheath, S.E.* By E. M. Antoniadi and A. C. D. Crommelin.

The sky was laden with heavy clouds on the night of November 14–15, but the wide gaps between them were so admirably transparent that stars of the second and third magnitudes in *Canis Major* could be easily seen down to within a very few degrees of the horizon.



Fourteen meteors, of which seven were *Leonids*, were recorded in three hours' watch, from $11^{h}\ 45^{m}$ to $14^{h}\ 45^{m}$ G.M.T. Owing to the clouds it is impossible to give an horary mean of the number of *Leonids* that would have been visible at the time